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# NGVTF

JANUARY 15, 2014



# Disclosure

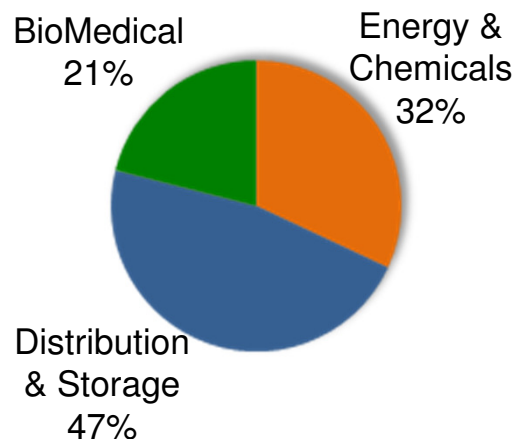
Forward-Looking Statements: This presentation includes “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. The use of words such as “may”, “might”, “should”, “will”, “expect”, “plan”, “anticipate”, “believe”, “estimate”, “project”, “forecast”, “outlook”, “intend”, “future”, “potential” or “continue”, and other similar expressions are intended to identify forward-looking statements. All of these forward-looking statements are based on estimates and assumptions by our management as of the date of this presentation that, although we believe to be reasonable, are inherently uncertain. Forward-looking statements involve risks and uncertainties that could cause the Company’s actual results or circumstances to differ materially from those expressed or implied by forward-looking statements. These risks and uncertainties include, among others, the following: the cyclical nature of the markets that the Company serves; a delay, significant reduction in or loss of purchases by large customers; fluctuations in energy prices; the potential for negative developments in the natural gas industry related to hydraulic fracturing; changes in government energy policy or failure of expected changes in policy to materialize; competition; economic downturns and deteriorating financial conditions; our ability to manage our fixed-price contract exposure; the Company’s ability to successfully manage its costs and growth, including its ability to successfully manage operational expansions; our reliance on key suppliers and potential supplier failures or defects; the modification or cancellation of orders in our backlog; changes in government healthcare regulations and reimbursement policies; general economic, political, business and market risks associated with the Company’s global operations and transactions; our ability to successfully acquire or integrate new product lines or businesses, including the ability to successfully integrate those businesses; the loss of key employees and deterioration of employee or labor relations; litigation and disputes involving the Company, including product liability, contract, warranty, employment and environmental claims; the adequacy of our warranty reserves; fluctuations in foreign currency exchange and interest rates; the financial distress of third parties; the regulation of our products by the U.S. Food & Drug Administration and other governmental authorities; the pricing and availability of raw materials; potential future impairment of the Company’s goodwill and other intangibles; the cost of compliance with environmental, health and safety laws; our ability to protect our intellectual property; technological security threats; additional liabilities related to taxes; the impact of severe weather; risks associated with our indebtedness, leverage, debt service and liquidity; and volatility and fluctuations in the price of the Company’s stock. For a discussion of these and additional risks that could cause actual results to differ from those described in the forward-looking statements, see disclosure under Item 1A. “Risk Factors” in the Company’s most recent Annual Report on Form 10-K and other recent filings with the Securities and Exchange Commission, which should be reviewed carefully. Please consider the Company’s forward-looking statements in light of these risks. Any forward-looking statement speaks only as of its date. We undertake no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.

# Company Overview

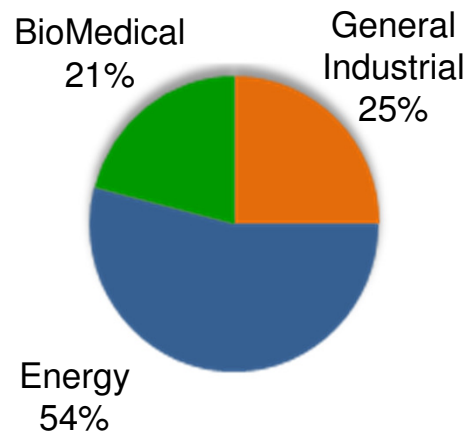
**Chart Industries is a leading provider of highly engineered cryogenic equipment for the hydrocarbon, industrial gas, and biomedical markets**

- ❖ Technology leader that provides high-end equipment to the energy industry, which is the largest end-user of Chart's products
- ❖ One of the leading suppliers in all primary markets served
- ❖ Global footprint for our operations on four continents with approximately 4,900 employees
- ❖ More than half of sales outside the U.S. and more than half made to the energy markets

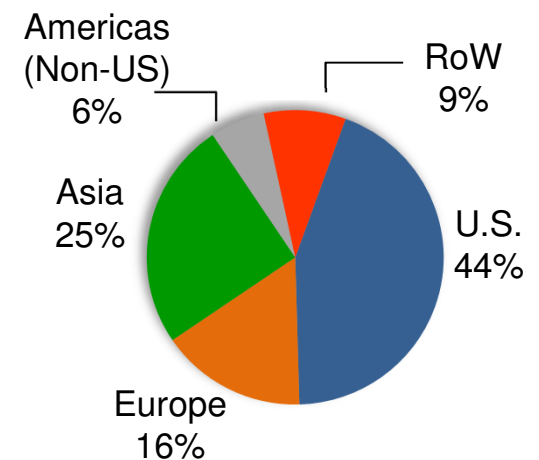
FY 2012 Sales by Segment



FY 2012 Sales by End User



FY 2012 Sales by Region



# Why is LNG useful as a fuel?



**ECONOMICS**



**EMISSIONS**



**ENERGY INDEPENDENCE**



**LNG is optimal for larger natural gas applications**

- ❖ Highest energy density
  - ❖ Less space & weight required
  - ❖ Longer driving range available
- ❖ Fastest fill speeds
- ❖ Easily scalable infrastructure

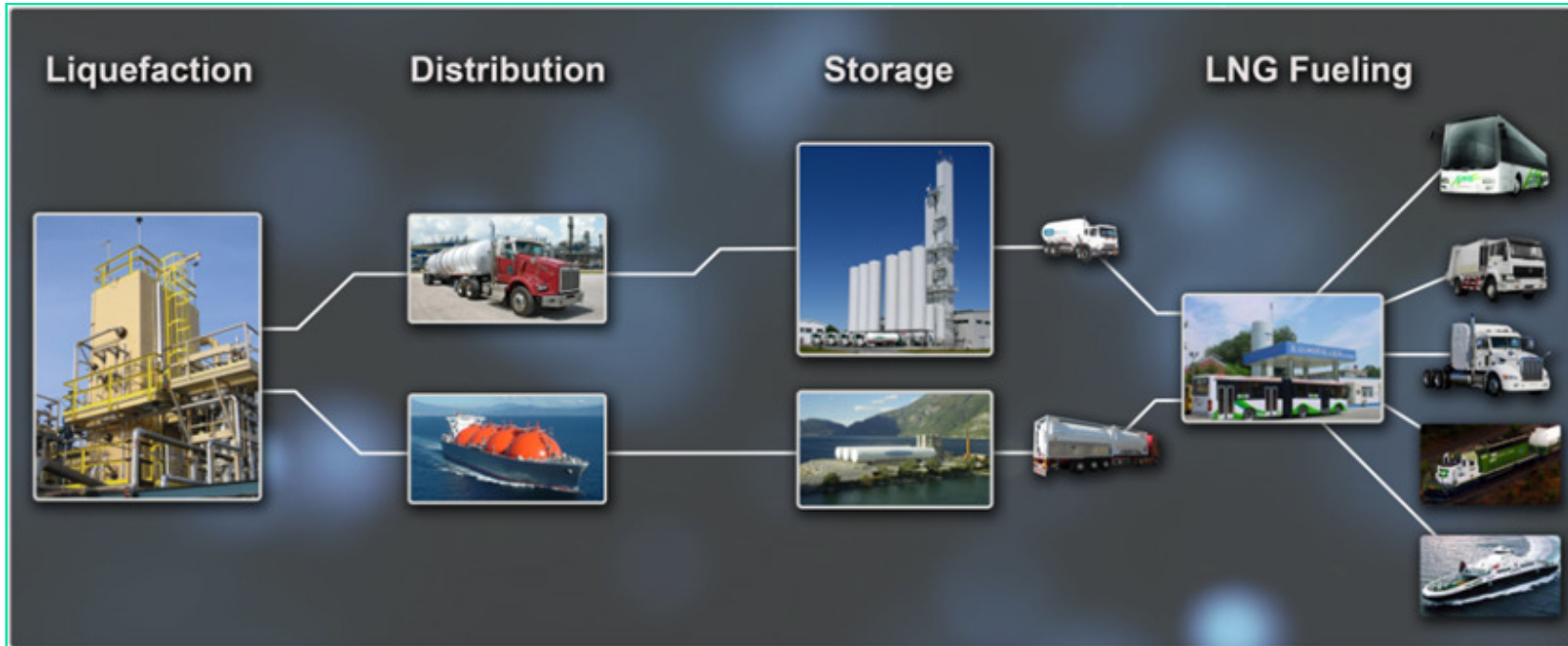
**-260 °F**

# LNG Value Chain



**Chart** – the industry's unrivalled integrated supplier and a worldwide leader in Liquefied Natural Gas (LNG) equipment for transportation and energy.

Uniquely positioned to address the **entire LNG Value Chain** – liquefaction, distribution, storage and end-use – we bring many years of experience in LNG solutions to our customers, facilitating the use of a clean-burning, safe fuel alternative to diesel into your future.





# Liquefaction – Overview

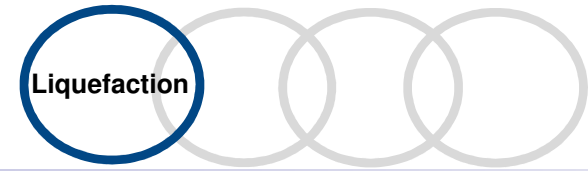
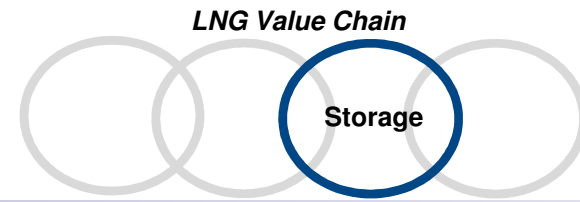


Chart is a leader in liquefaction solutions & Mission Critical Equipment

- Brazed Aluminum Heat Exchangers (BAHX)
- Cold Boxes
- Process Systems:
  - ✓ Proprietary process technology - IPSMR®
  - ✓ Standard LNG plants for small and mid-scale gas monetization
  - ✓ Modular LNG solutions



# Satellite Storage - Norway



## Norwegian Filling Terminals Halhjem, Mosjoen, Vestbase, Heroya, Kolo, ORA

**Experience:** Several LNG terminals with connections for ships

### Example Scope (Halhjem):

- 2 Horizontal Bulk Tanks (500 m<sup>3</sup> each)
- 1,700 litre/min Cryogenic Pump
- 100 meters of Vacuum Insulated Pipe (VIP)

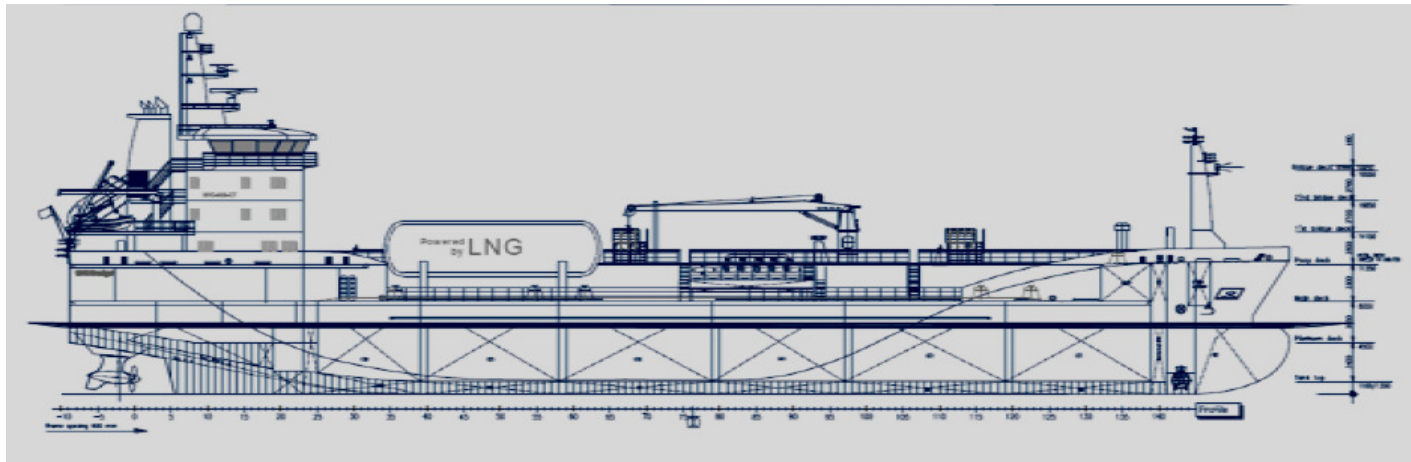


## Project Highlights

- Used for refueling ferry ships nightly
- Interconnecting piping below roadway
- Full solution: storage and VIP → fueling module

# Maritime Applications

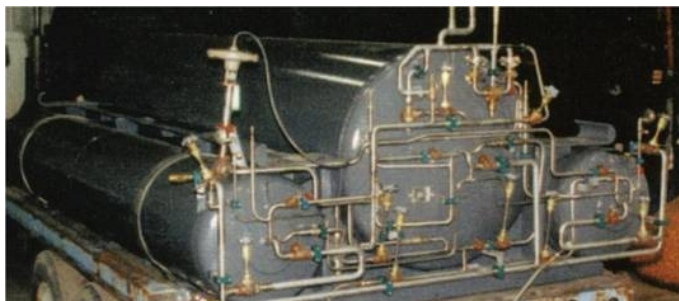
- ❖ Chart's solution:
  - ❖ LNG satellite storage and filling stations
    - Below deck or above deck
    - Tanks, vaporizers, cold boxes, pipeline
  - ❖ Experience/success in Europe can be transferred globally





# Railroad Applications

- ❖ 24,000 locomotives consume approximately 4 billion gallons of diesel per year
- ❖ Over 20 years ago, Chart pioneered LNG solutions to provide natural gas to fuel long haul locomotives and yard switch engines
- ❖ Major rail companies reinitiating field trials
- ❖ Engine manufacturers in development to support full scale deployment within 2 years



# Oil & Gas Applications

- ❖ Chart provides mobile LNG regasification systems, transport trailers, mobile (temporary) vehicle fueling systems and vehicle tanks
- ❖ Features:
  - ✓ 15,000 gallon LNG capacity
  - ✓ The high flow system delivers 14,000 SCFH at 50 psig continuously.
  - ✓ Telemetry capable - remote monitoring of liquid level, gas temperature, pressure and flow



# Virtual Pipeline Distribution

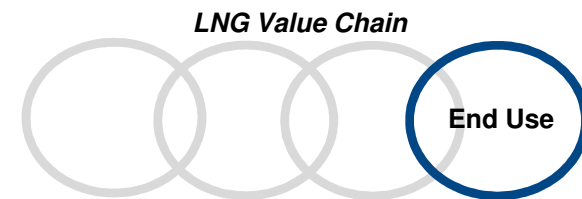
LNG Value Chain

Distribution



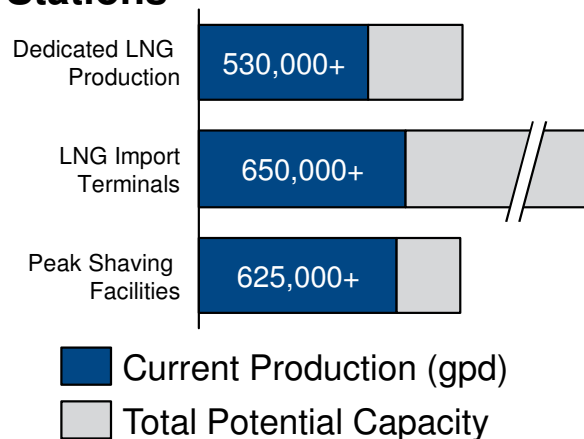


# Vehicle Fueling



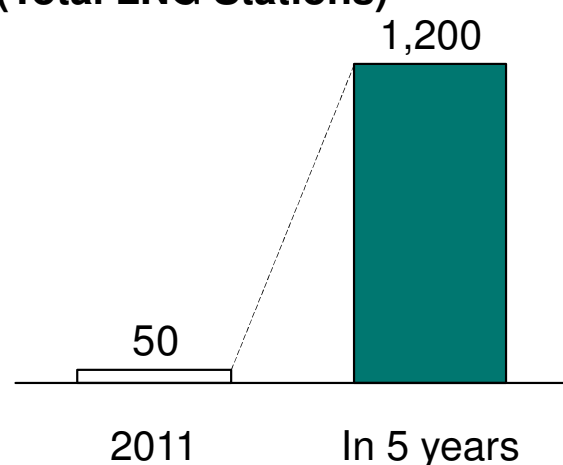
- ❖ **Opportunity:** replace diesel and gasoline powered vehicles with lower cost, cleaner burning, abundant, domestic natural gas vehicles
- ❖ **What's needed for LNG vehicle success?**
  1. available LNG from a production plant, peak shaving plant or import terminal
  2. refueling infrastructure or means to refuel the vehicles
  3. the appropriate vehicles (and engines) for the application
- ❖ **Current State in the US:**

## 1.) LNG Available for Fueling Stations



Source: Company Estimates

## 2.) Refueling Infrastructure (Total LNG Stations)



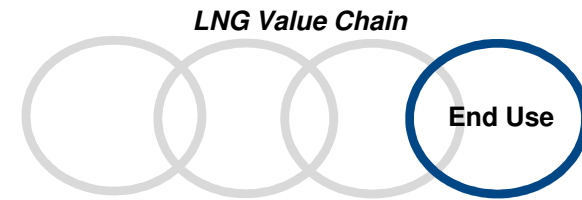
Source: Company Estimates

## 3.) LNG Vehicles/Engines

- ✓ **Est. 9,000+ LNG vehicles**
- ✓ **All Major Truck OEMs**  
(Including Freightliner, Peterbilt, Kenworth, Navistar, Volvo, Mack, and others)
- ✓ **Recent advancements in engine technology (improved power performance)**

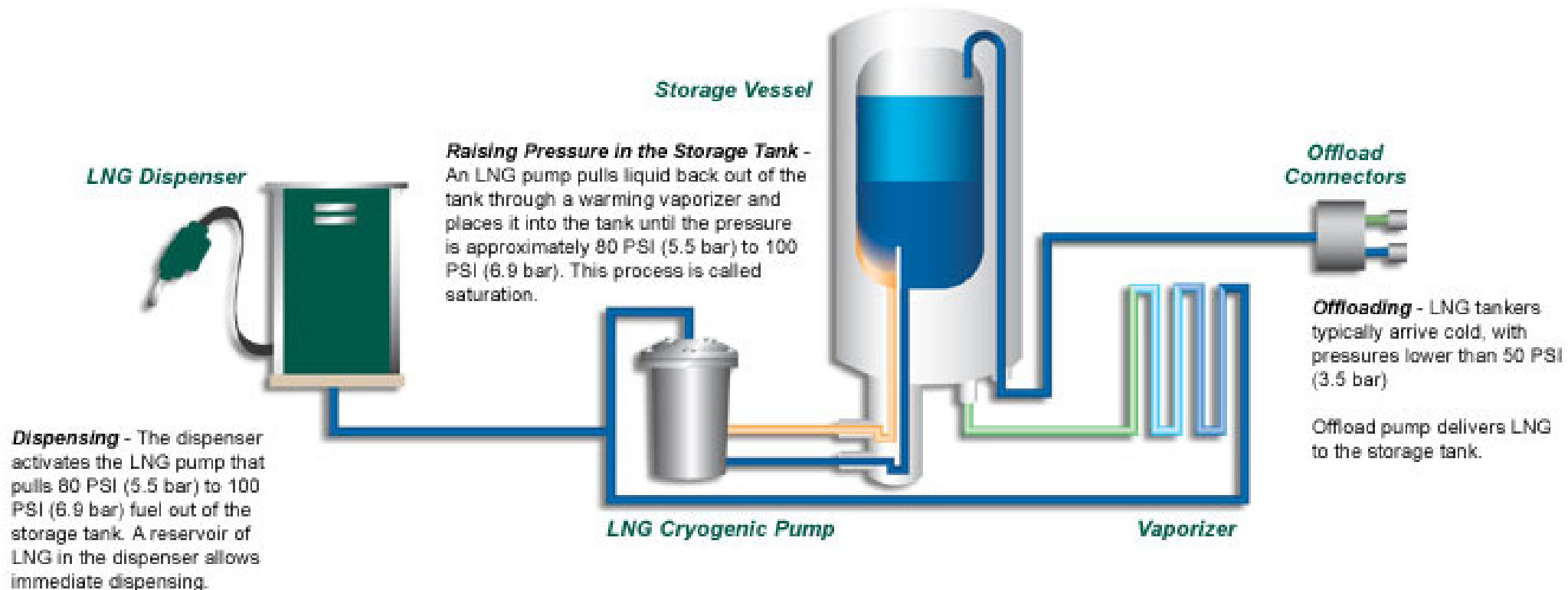


# LNG Filling Stations



## ❖ LNG Filling Stations

- ✓ Fuel 'saturated' to meet engine requirements
- ✓ Minimal on-vehicle complexity / low-maintenance
- ✓ Proven pump and meter technology for efficient filling
- ✓ Part of an optimized cryogenic value chain



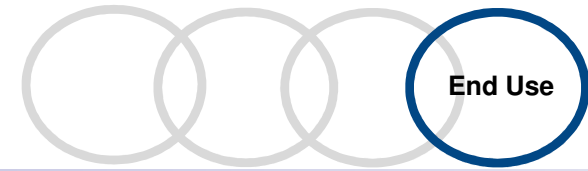
# LNG Filling Stations



## Entry Level Single 15,000 Gallon Vertical Tank



# LNG Filling Stations



## IMC Station Installation

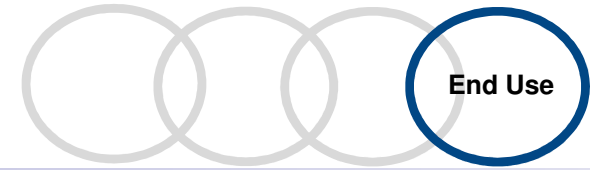


## LNG Transport Filling IMC Station





# LNG Filling Stations



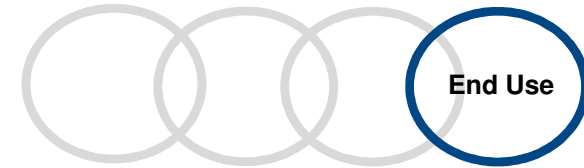
**Deliver Batches Of Fuel To Remote Sites  
Re-Fuel Vehicles**





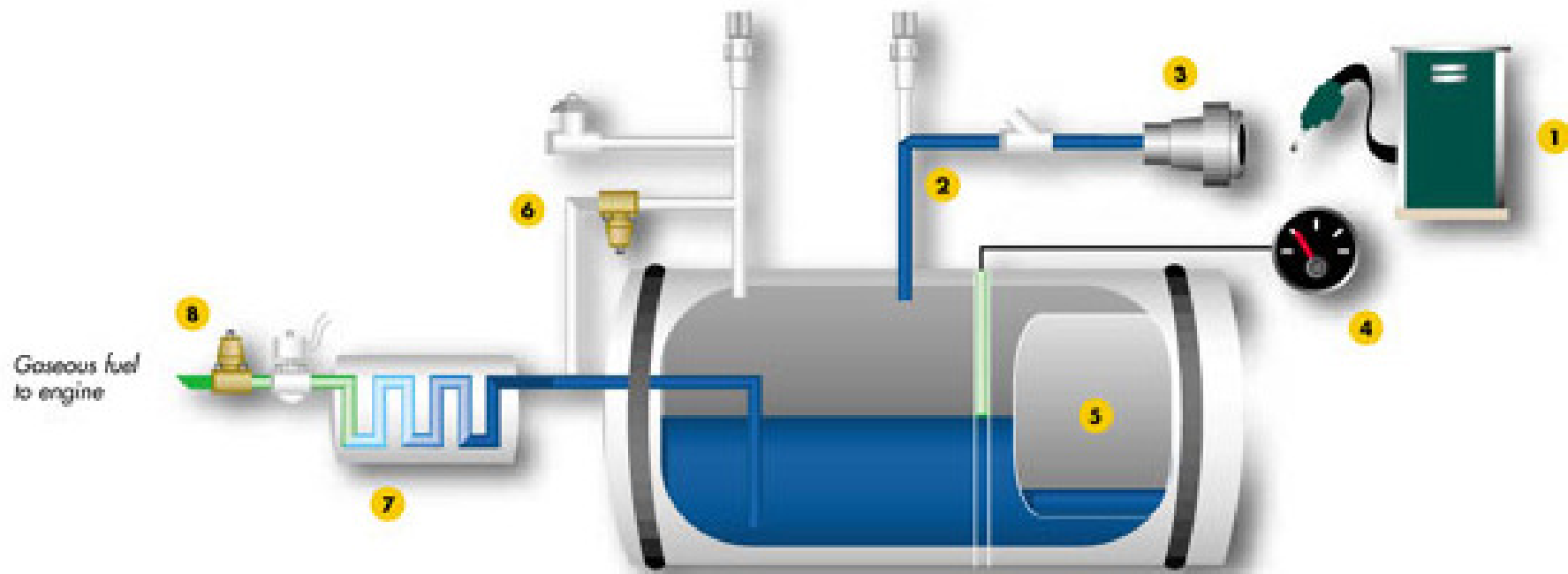
# On-board LNG Fueling Systems

LNG Value Chain



## ❖ On-board LNG Fueling System

- Auto-Refrigeration Technology
- Super Insulation / Longest Hold-Times
- Efficient Filling / Capacity Utilization



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# LNG Fuel Tank – Approvals

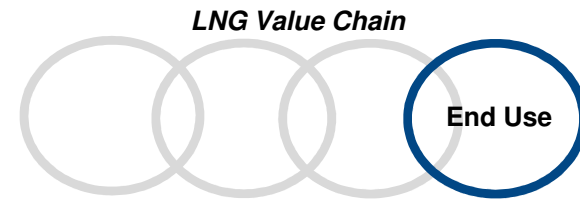


USA, CA  
UK  
Australia  
Europe, NL  
Russia  
Turkey  
Korea  
China  
Japan  
R110

**Regulatory requirements in local markets vary widely...**

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# LNG Fuel Tank – PV Design



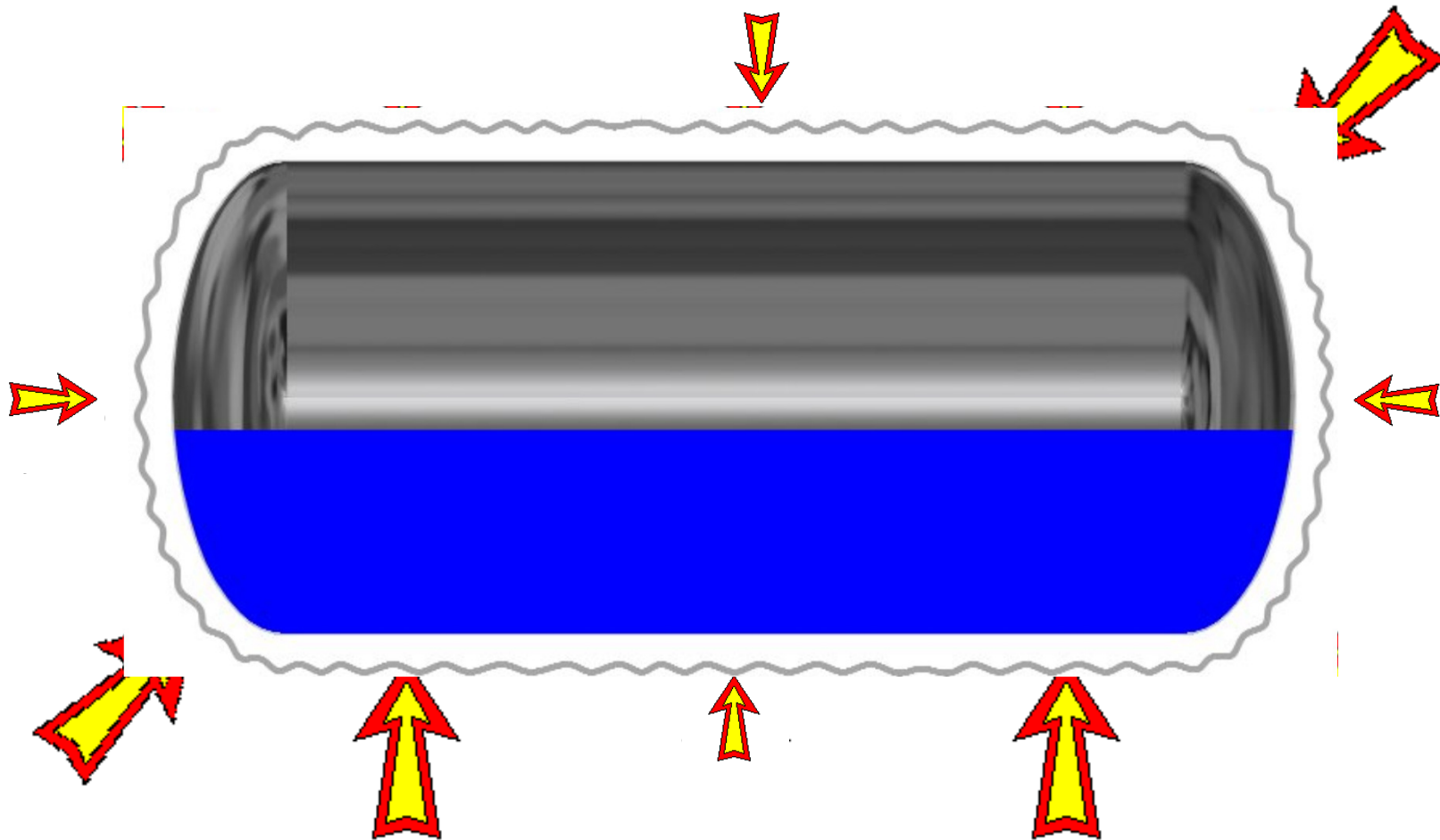
## Design Codes & Approvals

- ❖ DOT 4L vs. MC-338 (ASME)
- ❖ TPED – ADR vs. EN1251
- ❖ AS1210, GOST, KGA, KHK, GB

**Pressure vessel design is well-understood...**

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# LNG Fuel Tank – Cryo Design

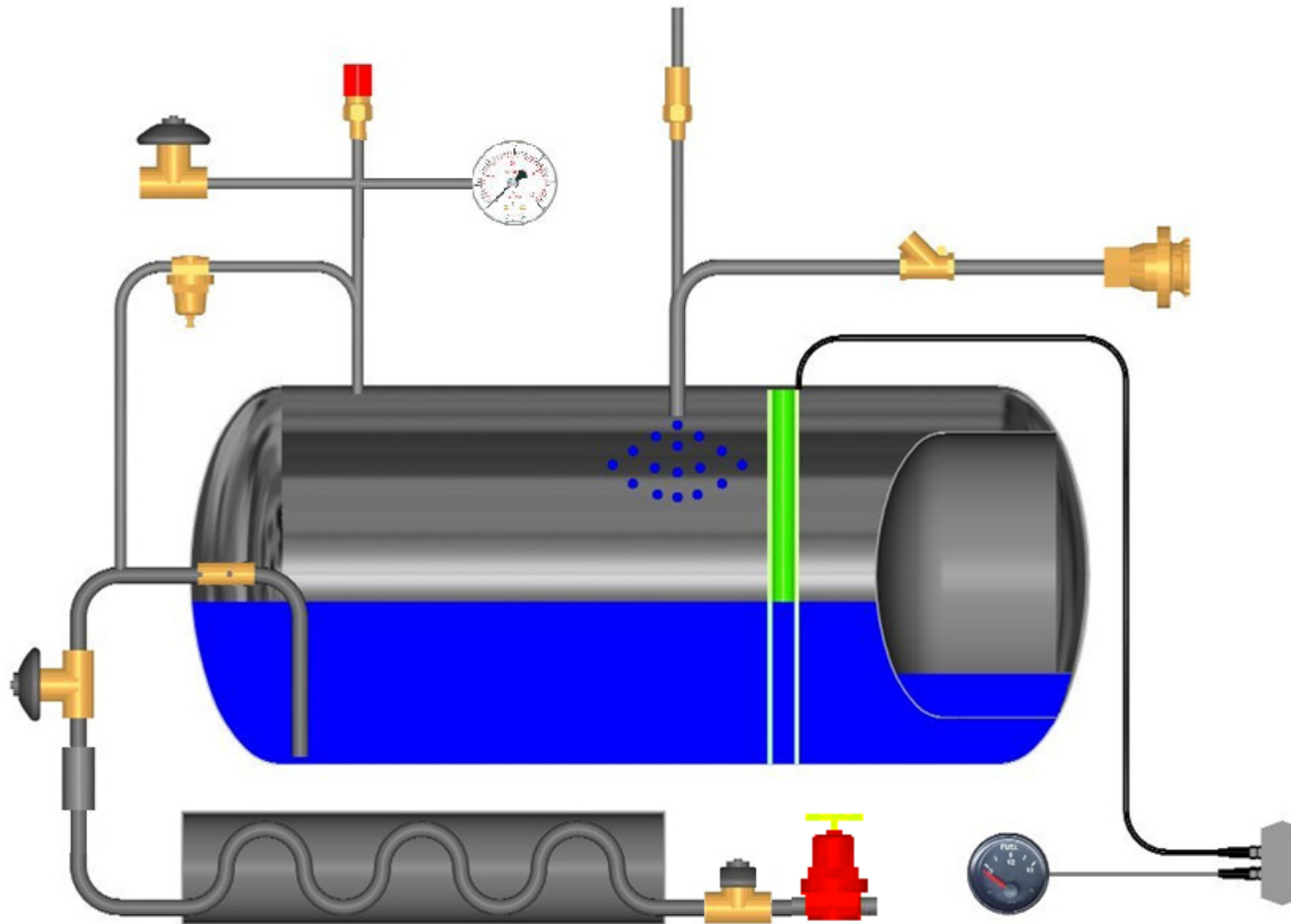
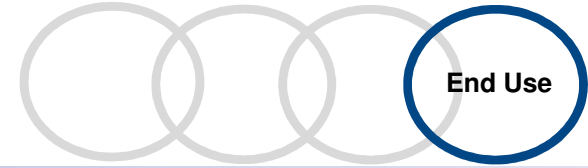


**The ultimate thermos bottle – stays cold for 7-10+ days...**



# LNG Fuel Tank – Plumbing

LNG Value Chain

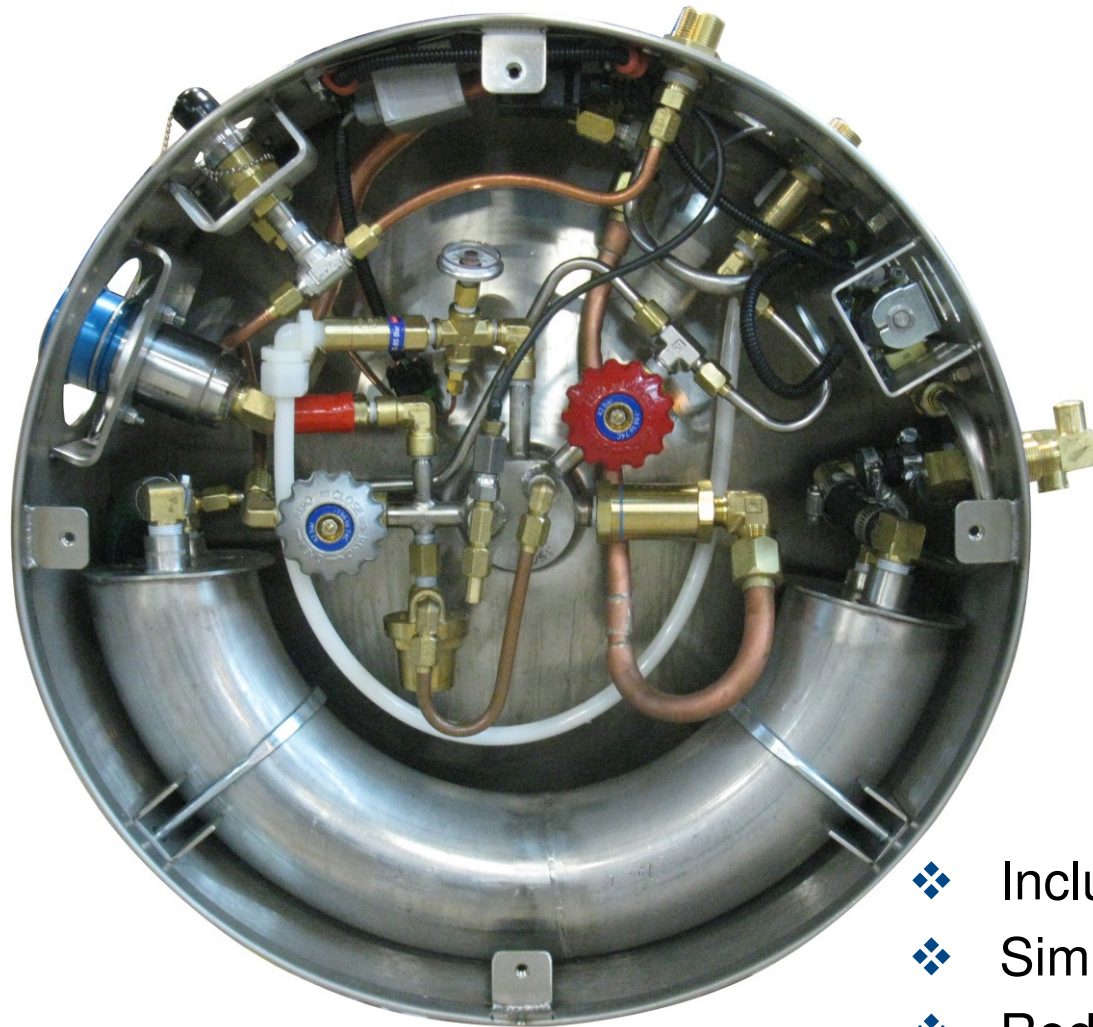
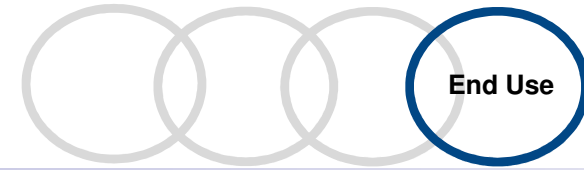


**Design for safety and reliability...**

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# HLNG – ‘Integrated’ Design

LNG Value Chain



Introduced at  
Mid-America  
Truck Show

## ‘Integrated’ Design

- ❖ Include all basic functions in single package
- ❖ Simplify and accelerate installation process
- ❖ Reduce space claim, but maintain tank size
- ❖ Improve cold-weather performance

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# LNG Fuel Tank – Safety Testing

Design Code

- ❖ Pressure Test

49 CFR 393 (FMCSA)

- ❖ Drop Tests

SAE J2343

- ❖ Fire Test

- ❖ Hold-Time Test

Korea, China, Japan

- ❖ Vibration Test

UN ECE R110

- ❖ G-Load Test

- ❖ Component Tests

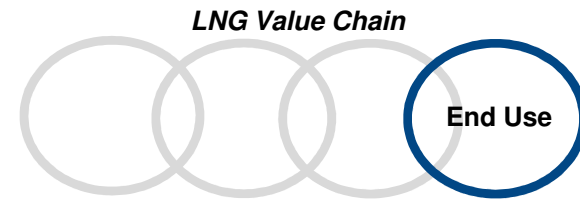


**Safety is the first priority...**

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# LNG Fuel Tank – Lifetime



## Normal Operation

- ❖ Multiple Decades...

## Incidents & Repair

- ❖ Crash
- ❖ Fire

## Maintenance

- ❖ Plumbing
- ❖ Insulation
- ❖ Contamination

## Fill Nozzle

- ❖ Connector Seals



**Durability is the industry requirement...**

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# Chart is There



## LNG Value Chain

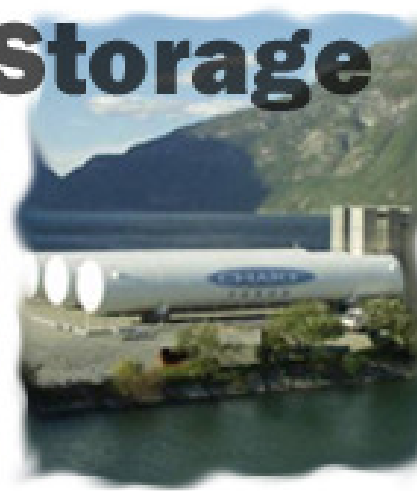
**Liquefaction**



**Distribution**



**Storage**



**End Use**



**Liquefaction, distribution, storage, and end use**

**The opportunities are vast and Chart is there:**

- LNG production plants
- LNG storage capacity
- LNG fueling stations
- LNG powered vehicles
- LNG powered ships
- LNG powered drilling rigs
- LNG powered railcars
- ... and more

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